

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Group Art Unit: 2827
Examiner: Jose H. ALCALA

Re PATENT APPLICATION of:

Applicant(s): Huey-Ru CHANG, et al.

Serial No.: 09/809,310

Filed: March 16, 2001

For: COAXIAL VIA HOLE AND PROCESS
OF FABRICATING THE SAME

Docket No.: SUND 188

**RESPONSE TO
RESTRICTION
REQUIREMENT**

April 11, 2002

Director of Patents
Washington, D.C. 20231

Sir:

Responsive to the Restriction Requirement dated March 12, 2002, Applicants elect claims 1-24 and 31-46, Group I, without traverse, and further elect the species shown in Figures 4A, 4B, 6A, 6B, 8, 10B, 11, 13 and 16 with traverse. Claims 1-24 read upon the elected species. Claim 1 is generic to the elected species.

1. Response to the examiner's opinion (1), Group I (claim 1-24, 31-46) is elected. Please be notified that the subject of Group I is a structure of "a coaxial via hole", which is misunderstood as "a printed circuit with a coaxial via hole" by the examiner.

2. Response to the examiner's opinion (5):

(A) The examiner's opinion of this application containing claims directed to 8 distinct species is in error. Our explanations are as follows:

(1). FIG. 4A and FIG. 4B are only for explaining the concept of a pillar-shaped capacitor which the invention relates to.

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(2). FIG. 6A and FIG.6B show the coaxial via holes according to the first embodiment of the invention. The coaxial via holes in FIG. 6A and FIG.6B act as a capacitor. The coaxial via holes shown in FIG. 6B is the modification of the coaxial via holes shown in FIG. 6A. The main techniques of the invention are illustrated in these two figures.

(3). FIG. 8 shows how the coaxial via hole is applied to a printed circuit board (PCB). In FIG. 8, the detailed way of applying the coaxial via hole into the PCB is illustrated. The main techniques of the coaxial via hole shown in FIG. 8 are substantially the same to the coaxial via hole shown in FIG. 6A and FIG. 6B. The only difference between FIG.6B (and 6A) and FIG. 8 is described in page 10, line 6-8: "the inner conductor 612 is cylinder-shaped while it is formed by plating. However, the inner conductor 612 is solid pillar-shaped while it is formed by filling conductive paste (referring to FIG. 8)." It is known to the person in the art, cylinder-shaped conductor and solid pillar-shaped conductor have the same electrical characteristic while the coaxial via holes acts as a capacitor.

(4). FIG. 10B shows a conductive trace having the function of noise shielding. The conductive trace shown in FIG. 10B is formed based on the coaxial via hole shown in FIG. 8A, which has solid pillar-shaped conductor. Except using the coaxial via hole as a capacitor, the coaxial via hole could be applied to transmit signal with the assistance of noise shielding. When using the coaxial via hole as a capacitor, the capacitor is applied a voltage difference between the inner conductor and the outer conductor. When the coaxial via hole is applied to transmit signal, the inner conductor is used to be a signal trace to transmit signal, and the outer conductor is connected to ground level to function noise shielding. Thus, signal transmitted in the inner conductor is protected by the grounded outer conductor with the function of noise shielding, and the signal interference is reduced. As described above, the coaxial via hole shown in FIG. 10B is not another species of the claimed invention. FIG. 10B just illustrate how to apply the same structure of coaxial via holes shown in FIG. 6A to transmit signal with the function of noise shielding.

(5). FIG. 11 is the lateral view of a computer system structure, which uses the coaxial via hole of the invention as a capacitor. That is, FIG. 11 shows another environment, i.e., a computer system, which the coaxial via holes is applied. Therefore, FIG. 11 does not illustrate another species of the claimed invention. The module board 1114 in FIG. 11 can use the coaxial via hole of the invention to achieve the objective of economizing on module board 1114 area. The implement way of using the coaxial via holes in module board 1114 is illustrated in FIG. 13.

(6). FIG. 16 is the cross section of a connector having the coaxial via holes structure. Except using the coaxial via holes of the invention in the PCB, the coaxial via holes of the invention could be applied in other kinds of carrier, such as substrate, IC socket, adapter, connector, and heat sink. FIG. 16 focuses on applying the coaxial via holes in connector. Therefore, FIG. 16 only illustrates the way of another application, but not a distinct species of the claimed invention.

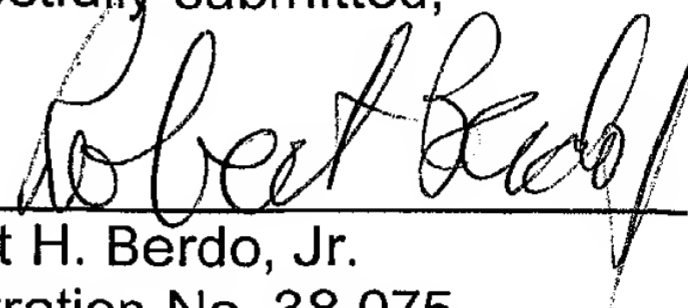
(B) Response to examiner's opinion (6), the application indeed has a generic claim, such as claim 1. In detail, claim 1 is the generic claim of the first embodiment corresponding to FIG. 6A and 6B. FIG. 8, FIG. 10B, FIG. 13, and FIG. 16 are all based on FIG. 6A and 6B. Consequently, the technique shown in FIG. 8, FIG. 10B, FIG. 13, and FIG. 16 correspond to the dependent claims of claim 1, as follows:

- (1). FIG. 8 corresponds claim 3 and claim 10.
- (2). FIG. 10 corresponds to claim 14.
- (3). FIG. 13 corresponds to claim 3.
- (4). FIG. 16 corresponds to claim 7.
- (5). FIG. 4 and FIG. 11 have no corresponding dependent claims.

Examination of the application on the merits is respectfully requested.

April 11, 2002
Date

Respectfully submitted,



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